

CONSOLIDATED INFORMATION TECHNOLOGY SERVICES TASK ASSIGNMENT (TA)

1. **TITLE:** (D211) IIFD Flight Deck Model
**Maintenance Under Existing Task RFC025 - Advanced Engineering Environments
Branch Lab Operations**

SubTask No:	RFC025.07-Rev2	SubTask Internal Control No:	NONE
Task Area Monitor:		Alternate Task Area Monitor:	
NASA POC:			
Software Control Class:	LOW CONTROL	Priority Level:	ROUTINE
Type of Task:	Recurring Task		

2. BACKGROUND

This task supports the Integrated Intelligent Flight Deck (IIFD) project. IIFD research is based on a vision for future flight deck systems that includes systematic incorporation of integrated displays and interactions, decision-support functions, information management and abstraction, and appropriate human/automation function allocations. The future flight deck system is aware of the vehicle, operator, and airspace system state and responds appropriately. The system senses internal and external hazards, evaluates them, and provides key information to facilitate timely and appropriate responses. The system is robust and is adaptable to the addition of new functions and information sources as they become available. (See <http://www.aeronautics.nasa.gov/avsafef/iifd/index.htm> .)

3. OBJECTIVE

Develop a UML model of flight deck systems information management.

Goals:

The model should encompass flight deck information types such as

" Databases (i.e. databases for airport maps, terrain data, obstacles, nav, charts)

" Data from sensors (i.e. radars, FLIR, INS)

" Data linked information (i.e. GPS, digital NOTAMs, ADS-B)

" Pilot inputs (i.e. controls, communication)

" And possibly derived data from information types above (i.e. velocity from GPS)

4. MAINTENANCE REQUIREMENTS

The model shall be maintained to operate as expected on the hardware provided to support the task.

5. GENERAL IT SUPPORT SERVICES

None required.

6. SYSTEM AND APPLICATION DEVELOPMENT SERVICES

Project Title: Digital Avionics Systems Subject Matter Expert

LaRC Software Manager:

Software Software Control Class: Low

Responsibilities of Contractor and LaRC personnel: Subject matter expertise shall be provided to assist in the creation of the Flight Deck Model. Individual must possess expertise in digital avionics system architecture, its design, and implementation. Specific experience with flight deck displays and navigation systems, interface details of major system elements and ARINC (<http://www.arinc.com>) Specifications and Standards shall be required. These include but are not limited to the Digital Information Transfer System (ARINC Specification 429), Multi-Transmitter Data Bus (ARINC Specification 629), Avionics Full-Duplex Switched Ethernet (AFDX / ARINC Specification 664) and digital systems and equipment installed on current production transport aircraft (ARINC 700 Series). Efforts shall be provided under specific direction as they arise. Subject matter expert shall work cooperatively with both civil servant and contractor team members.

7. WORK-AREA SPECIFIC SERVICES

Work Area Title: Flight Deck Model

LaRC Manager:

Work Area Description: A model of flight deck information management is needed. It is proposed to develop this model by extending the Aeronautical Information Exchange Model

(AIXM) being developed by EUROCONTROL and the FAA. AIXM is designed to enable the management and distribution of Aeronautical Information Services (AIS) data in digital format. AIXM consists of a UML conceptual model and an implementation of the model in XML. The UML model describes the features and their properties (attributes and associations) within the domain. The XML schema enables systems to exchange aeronautical information (such as via digital NOTAMs).

(See http://www.aixm.aero/public/subsite_homepage/homepage.html .)

Work Area Requirements: " Review descriptions, presentations, and training material at www.aixm.aero to understand AIXM

" Join the AIXM Forum from the website to follow discussion topics via email

" Download the AIXM 5 UML model .mdl file from

http://www.aixm.aero/public/standard_page/download.html

" Download and install Rational Rose Modeler v 7 from

<http://www-306.ibm.com/software/awdtools/developer/rose/modeler/>

" A Rational Rose Modeler network license will be provided

" Explore the various packages (AirportHeliport, Airspace, etc) in AIXM 5

" Search for flight deck conceptual models that could serve as a basis for an AIXM flight deck information package

" Initiate the development of a new flight deck information package for AIXM

8. Exhibit A

None required.

9. SPECIAL SECURITY REQUIREMENTS

None.

10. SOFTWARE ENGINEERING PROCESS REQUIREMENTS

Software Engineering Process requirements consistent development of software considered low control shall be followed. These requirements are listed in the ConITs Software Project Management Plan Version 1.11 dated November 2007.

11. JOINT REVIEW SCHEDULE

Weekly updates regarding project status shall be provided to the Sub Task manager.

12. PERIOD OF PERFORMANCE

This TA is effective from 04/17/08 to 04/27/10

13. TECHNICAL PERFORMANCE RATING

Flight Deck model

Quality: 50% Timeliness: 50%

14. RESPONSE REQUIREMENTS

None required.

15. FUNDING INFORMATION

Funding has not been entered for this TA.

16. MILESTONES

None required.

17. DELIVERABLES

Number	Deliverable Item	Deliverable Schedule
1	" Demonstrate the process for creating a new package for AIXM using Rational Rose Modeler	4/27/2009
2	" Results of the search for existing flight deck information models	4/27/2009
3	" A proposed conceptual model for flight deck information management	4/27/2009
4	Preliminary UML model of flight deck systems information management	12/31/09

18. FILE ATTACHMENTS

None.